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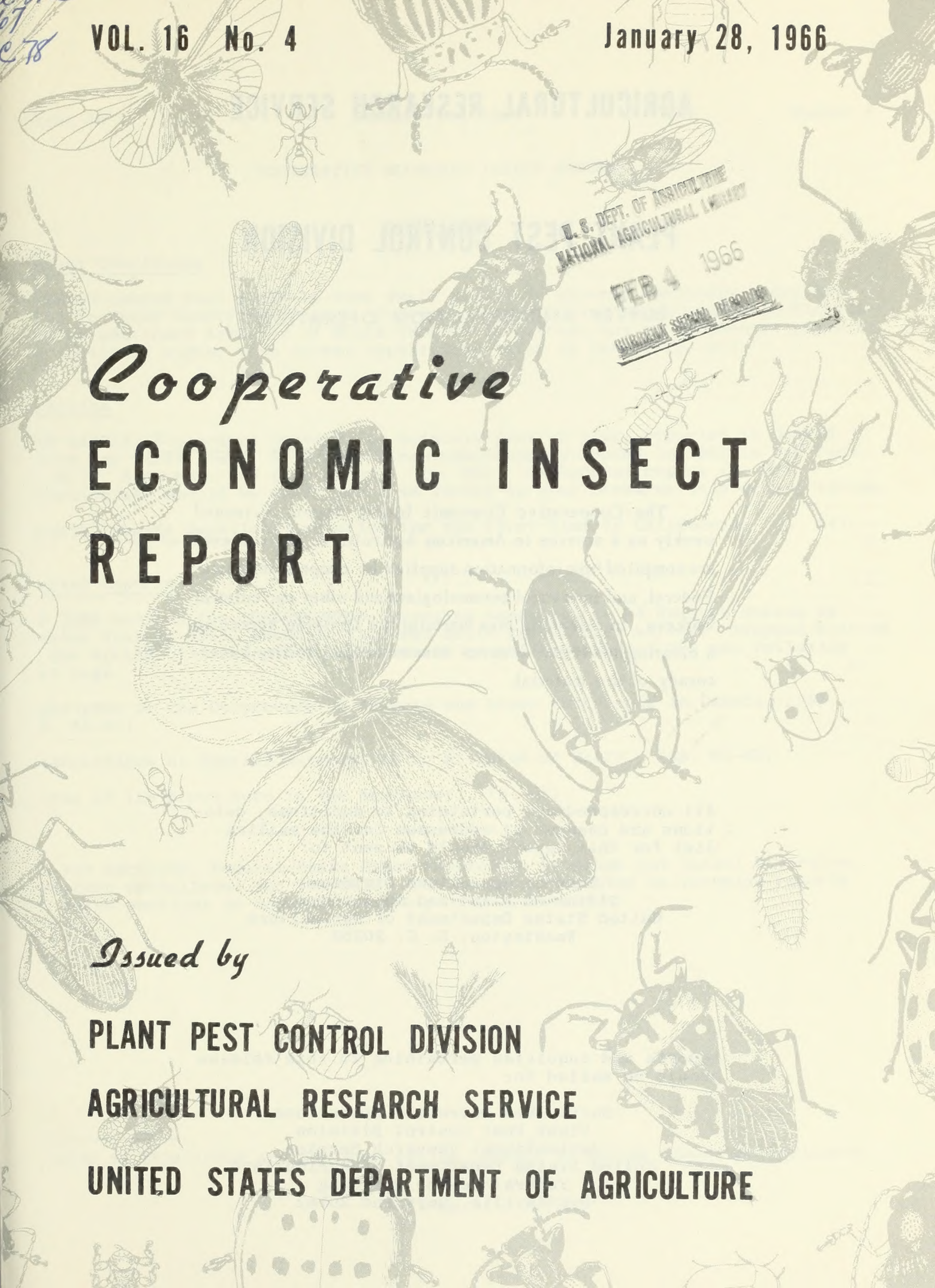
VOL. 16 No. 4 January 28, 1966



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Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 January 28, 1966 Number 4

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG caused dead spots in some small grains in Kansas; spottedly heavy in wheat in Grady County, Oklahoma. Absence of subfreezing temperatures in Florida favored continued activity of SCALE INSECTS in citrus; not of concern at present, but indicates higher than normal populations later in year. (p. 51).

Detection

PEAR SAWFLY (Hoplocampa brevis), an economic pest of pear, reported in United States for first time. Determined from specimens collected in 1953 in New York. (p. 62). Also reported from Canada. (p. 59). Background report (p. 56). Entomologists should be alert for this insect in pear orchards this coming spring.

A SNAIL (Rumina decollata) reported for the first time in California. (p. 54).

Special Reports

The 1966 outlook for GRASSHOPPERS infesting rangeland in 14 Western States is greater than in 1965, based on the 1965 adult grasshopper survey. Nymphal surveys in the spring will determine the need for control measures. See map following last page.

Highlights of the Occurrence of Insects and Other Arthropods in Canada, 1965. (pp. 58-60).

Interceptions of Special Interest at U. S. Ports of Entry. (pp. 61-62).

Status of the Screw-worm in the Southwest. (p. 55).

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Two new sections, Federal-State Plant Protection Programs and Insect Detection, have been established for the CEIR. Please indicate notes on incoming reports for these sections in order to assure proper placement.

Reports in this issue are for week ending January 21 unless otherwise indicated.

WEATHER OF THE WEEK ENDING JANUARY 24

HIGHLIGHTS: (1) Very cold week, most areas. (2) Heavy snowstorm, East Central and Northeast; first Northeaster in 23 months.

TEMPERATURE: Arctic air which had moved into the area earlier strengthened its grip over most of the Nation during the past week. Most of the Great Plains area averaged 15° to 30° colder than the previous week and 10° to 25° below normal. Breien, North Dakota, registered 42° below zero Friday morning; the weekly average temperature at Williston, North Dakota, was 19° below zero. The cold thrust brought the first major outbreak of Arctic air to Kansas and the coldest weather in 3 years to Texas. The temperature at Dalhart, Texas, dropped to 7° below zero and subfreezing temperatures occurred over the entire State, except the lower Rio Grande Valley. Roswell, New Mexico, registered 16° below zero on Saturday morning. In contrast to other areas, New England averaged 4° to 6° above normal and 6° to 10° warmer than the previous week.

PRECIPITATION: Amounts were light in the Pacific Northwest. Significant precipitation occurred mainly in a belt from New Mexico to Florida and from the southern Appalachians to New England. Snowfall was up to 14 inches in northern New Mexico and 5 to 10 inches in northwestern Texas and parts of Oklahoma. Light to moderate rains fell on the Gulf coast, Florida, and some Atlantic coastal regions. Snowfall was 5 to 10 inches in the southern Appalachians and 10 to 20 inches on both slopes of the northern Appalachians and into parts of New England.

STORMS: An ill-defined low pressure system moved from New Mexico on Tuesday to the Georgia coast by early Saturday. This was followed by northeastward movement and explosive deepening so that a very deep low was over Nantucket, Massachusetts, by late Sunday. Snow accumulated to 18 inches in 24 hours at Buffalo, New York, (a new January record) while Watertown, New York, received 15 inches in 6 hours. High winds drifted the snow and caused damage to powerlines in the New York City area. A tanker was driven aground near the entrance to New York Harbor. This weekend storm was a typical "northeaster" and the first storm of this type since February 1964. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Schizaphis graminum) - KANSAS - Counts per linear foot by county as follows: Ranged trace to 50 in Harvey; averaged 20 in Sumner and ranged 20-50 in Sedgwick, except near Wichita where highs of 1,000 plus caused dead spots in fields. (Brooks, Simpson). Trace in Reno. (Harvey). Averaged 10 in Cowley and Chautauqua, except one field at Havana, Chautauqua County, with average of 100. Ranged 50-400 (averaged 200) in Montgomery; trace in Labette; none found in southwestern section of State. (Gates). OKLAHOMA - Ranged 6-25 per linear foot in wheat checked in Tillman and Jackson Counties. Moderate in Kingfisher County and heavy spots noted in Grady County. (Okla. Coop. Sur.). NEW MEXICO - Very light in small grain checked in Curry and Roosevelt Counties. Averaged less than 1 per linear foot. (Nielsen, Elson).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - Ranged 2-35 per linear foot in wheat in Jackson and Tillman Counties. (Okla. Coop. Sur.).

ENGLISH GRAIN APHID (Macrosiphum avenae) - FLORIDA - Increased from 45 nymphs to approximately 85 nymphs and adults per 100 sweeps in rye at Gainesville, Alachua County. (Mead).

PEA APHID (Acyrthosiphon pisum) - OKLAHOMA - Moderate in alfalfa in Kingfisher County. (Okla. Coop. Sur.). ARIZONA - Moderate numbers active in Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Light, spotted infestations in southern half of State. (N. M. Coop. Rpt.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Remains moderate in Washington County alfalfa and light in Kingfisher County. (Okla. Coop. Sur.).

LEAFHOPPERS - FLORIDA - Most leafhopper and planthopper species on rye at Gainesville, Alachua County, declined sharply since December 24. Macrosteles fascifrons (six-spotted leafhopper) increased from 2 to 11 per 100 sweeps and Balclutha hebe (a leafhopper) increased to 1 adult per sweep. Cuerna costalis averaged 8 adults per 100 sweeps on bitter blue lupine at Gainesville, a reduction from December 24. (Mead, Jan. 18).

ALFALFA LOOPER (Autographa californica) - CALIFORNIA - Larvae appearing in many alfalfa fields in Fresno County. (Cal. Coop. Rpt.).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Ranged 10-25 per linear foot in wheat in Tillman County. (Okla. Coop. Sur.).

FRUIT INSECTS

Citrus Insect Situation in Florida - Mid-January - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 70 percent of groves (norm 67 percent); 52 percent economic (norm 44 percent). Decreasing, especially on fruit, but still above normal and in high range. Further decrease expected. Highest districts south, west and north. TEXAS CITRUS MITE (Eutetranychus banksi) infested 38 percent of groves (norm 31 percent); 17 percent economic (norm 10 percent). Moderate but above average for January. Little change expected. Scattered groves will have important infestations. Highest districts west and north. P. oleivora and E. banksi likely to be more abundant and more injurious in young groves than in bearing groves of the type from which data in this report obtained. Very light infestations of SIX-SPOTTED MITE (Eotetranychus sexmaculatus) appeared in 6 percent of groves. Absence of subfreezing temperatures favored continued activity of SCALE INSECTS; not of concern at present but indicates higher than usual populations later in year. Especially true for BLACK SCALE (Saissetia oleae). Warm winter caused crawlers of a SNOW SCALE (Unaspis citri) to be unusually abundant and active. WHITEFLIES decreased but still above normal for January. Further decrease to average level expected. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

APHIDS - MARYLAND - Eggs of undetermined species very heavy on apple tree twigs in orchard near Ellicott City, Howard County. (U. Md., Ent. Dept.).

POLYPHEMUS MOTH (Antheraea polyphemus) - ALABAMA - Several pupae observed on plum trees in home orchard in Geneva County and on apple trees in Lee County. (Reynolds, Bagby, et al).

PUSS CATERPILLAR (Megalopyge opercularis) - ALABAMA - Pupae observed in apple orchard in Lee County. (McQueen).

YELLOW SCALE (Aonidiella citrina) - CALIFORNIA - This and A. aurantii medium locally on orange trees in Vacaville, Solano County. (Cal. Coop. Rpt.).

Citrus Blackfly, Mediterranean Fruit Fly and Mexican Fruit Fly - See Federal-State Plant Protection Programs, pages 60, 61.

TRUCK CROP INSECTS

CABBAGE APHID (Brevicoryne brassicae) - ARIZONA - Damaging numbers in Yuma County. (Ariz. Coop. Sur.).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Controls continue in Yuma County. (Ariz. Coop. Sur.). FLORIDA - Lightly damaging cabbage at Sanford, Seminole County. (Desin).

LEAF MINER FLIES (Liriomyza spp.) - FLORIDA - Lightly damaging celery and cabbage at Sanford, Seminole County. (Desin).

Sweetpotato Weevil - See Federal-State Plant Protection Program, page 61.

COTTON INSECTS

Boll Weevil and Pink Bollworm notes are included in Federal-State Plant Protection notes, page 60.

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

AN ENGRAVER BEETLE (Ips mexicanus) - CALIFORNIA - Larvae and adults heavy locally on Monterey pine in Baywood Park, San Luis Obispo County. (Cal. Coop. Rpt.).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - NEW MEXICO - Very heavy on ponderosa and pinyon pines at shopping center and occasional light infestations in home landscaping in Albuquerque, Bernalillo County. (Heninger).

A CLEARWING MOTH (Synanthedon castaneae) - ALABAMA - Larvae attacking several chestnut trees in Shelby County. Det. by D. M. Weisman. (Ledbetter, Clark).

ARMORED SCALES - CALIFORNIA - Odonaspis penicillata heavy on bamboo in civic center in San Rafael, Marin County. Aonidiella aurantii heavy on Laurus sp. locally in Tracy, San Joaquin County. (Cal. Coop. Rpt.). FLORIDA - Chrysomphalus aonidium damaged leaves of aspidistra in commercial establishment at Gainesville, Alachua County. (Graham, Jan. 13). All stages of Pinnaspis strachani caused severe damage to stems and bark of hibiscus 'Snow Queen' in nursery at Miami, Dade County. (Meyer). NORTH CAROLINA - Pseudaulacaspis pentagona infested ligustrum locally in Anson County. (Mount).

ERIOCOCCID SCALES (Eriococcus spp.) - CALIFORNIA - E. coccineus locally medium on Mammillaria transitra cactus in El Centro, Imperial County. (Cal. Coop. Rpt.). NORTH CAROLINA - E. quercus infesting oak locally in Anson County. (Potter, Mount).

MEALYBUGS - NEW MEXICO - Light to very heavy on tropical plants in greenhouses and stores in Albuquerque area, Bernalillo County. (Heninger). CALIFORNIA - Pseudococcus adonidum medium on New Zealand flax nursery stock in Menlo Park, San Mateo County, and light in Soquel, Santa Cruz County. (Cal. Coop. Rpt.).

AN APHID (Dactynotus ambrosiae) - NEW MEXICO - Aphids, probably this species, moderate to heavy and widespread on iris plants in Albuquerque area, Bernalillo County. (N. M. Coop. Rpt.).

AZALEA WHITEFLY (Pealius azaleae) - ALABAMA - Nymphs heavy on underside of leaves on some old azalea plants in Lee County. (McQueen).

CABBAGE WEBWORM (Hellula rogatalis) - CALIFORNIA - This species, Spodoptera exigua (beet armyworm) and Plutella maculipennis (diamondback moth) light to medium on stock (Matthiola sp.) plants in Bonsall, San Diego County. (Cal. Coop. Rpt.).

DOGWOOD CLUB-GALL MIDGE (Mycodiplosis alternata) - TEXAS - Damaged dogwood trees locally in Harris County. (Hamman).

A SPIDER MITE (Oligonychus platani) - CALIFORNIA - Medium locally on pyracantha in Riverside, Riverside County. (Cal. Coop. Rpt.).

A HAPLOZETID MITE (Peloribates sp.) - CALIFORNIA - Adults heavy on rhododendron in Golden Gate State Park, San Francisco, San Francisco County. (Cal. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control during period contained Anopheles bradleyi, A. crucians, Aedes sollicitans, A. vexans, Culex pipiens quinquefasciatus, C. restuans, C. salinarius, Culiseta inornata, and Psorophora howardi. Light trap collections decreased; C. inornata predominant species. (Stokes).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Light on beef cattle in Bryan County. (Okla. Coop. Sur.).

HOUSEHOLD AND STRUCTURAL INSECTS

CLOVER MITE (Bryobia praetiosa) - MARYLAND - Entering homes at several localities in Baltimore and Prince Georges County. (U. Md., Ent. Dept.). VIRGINIA - Extremely abundant around homes in Henry, Brunswick and Botetourt Counties. (Isakson, et al.). ARKANSAS - Collected in new poultry house in Boone County. (Ark. Ins. Sur.).

EUROPEAN EARWIG (Forficula auricularia) - CALIFORNIA - Medium and invading residence in Chico, Butte County. (Cal. Coop. Rpt.).

SPRINGTAILS - OKLAHOMA - Invading homes in Enid, Garfield County; Stillwater, Payne County; Lawton, Comanche County; Oklahoma City, Oklahoma County; and Tulsa, Tulsa County. (Okla. Coop. Sur.).

A DAMPWOOD TERMITE (Zootermopsis nevadensis) - OKLAHOMA - Probably this species taken in wood shipped from Pacific coast to Comanche County. (Okla. Coop. Sur.).

STORED-PRODUCT INSECTS

DERMESTID BEETLES - CALIFORNIA - Trogoderma parabile and Anthrenus sp. infesting dry dog food in feed store in Merced, Merced County. (Cal. Coop. Rpt.).

Khapra Beetle - See Federal-State Plant Protection Programs, page 60.

BENEFICIAL INSECTS

A HISTER BEETLE (*Platysoma lecontei*) - VIRGINIA - Adults found on spruce and Virginia pine; predaceous on eggs and larvae of wood-boring beetles. (Isakson).

A LADY BEETLE - ALABAMA - Numerous larvae of a small brown species feeding freely on *Fiorinia theae* on heavily infested old camellia in Lee County. Low temperatures of 20-23° F. apparently have not affected activity. (McQueen).

A MACROCHELID MITE (*Macrocheles muscae*) - TEXAS - Ranged 6-8 (averaged 2) per fly on heavy, local populations of *Stomoxys calcitrans* in Grayson County. (Turney, Meisch).

MISCELLANEOUS INSECTS

A SNAIL (*Rumina decollata*) - CALIFORNIA - Heavy on miscellaneous ground covers on several properties in Riverside, Riverside County. Collected by G. Challet January 13. Det. by T. Kono. This is a new State record. (Cal. Coop. Rpt.). This species apparently thrives in home gardens and uncultivated plots when introduced; it feeds on both vegetable matter and other snails. (PPC).

SOUTHERN LYCTUS BEETLE (*Lyctus planicollis*) - TEXAS - Probably this species heavy locally and damaging ash lumber in Lavaca County. (Fawcett).

LIGHT TRAP COLLECTIONS

FLORIDA (Gainesville, 1/18; blacklight) - *Agrotis ipsilon* 1, *Feltia subterranea* 1.

GEORGIA (Tifton, 1/12-19; temp. 35-64°F.; precip. 2.10 in.; blacklight) - *Heliothis zea* 0, *H. virescens* 0, *Manduca quinquemaculata* 0, *M. sexta* 0.

SOUTH CAROLINA (Charleston, 1/10-16; temp. 38-60°F.; precip. 2.03 in.; blacklight)-*Pseudaletia unipuncta* 3, *Spodoptera frugiperda* 0, *Prodenia ornithogalli* 1, *Agrotis ipsilon* 3, *F. subterranea* 8, *Peridroma saucia* 0, *H. zea* 0, *H. virescens* 0, *Manduca sexta* 0, *M. quinquemaculata* 0, *Estigmene acrea* 0, *Trichoplusia ni* 0.

TEXAS (Brownsville, 1/8-14; temp. 42-76°F.; precip. 0.57 in.; 2 blacklight) - *A. ipsilon* 13, *E. acrea* 7, *F. subterranea* 0, *H. virescens* 0, *H. zea* 3, *Loxostege similalis* 0, *P. saucia* 0, *P. ornithogalli* 5, *M. quinquemaculata* 0, *M. sexta* 0, *P. unipuncta* 10, *Spodoptera exigua* 0, *S. frugiperda* 0, *T. ni* 2.

STATUS OF THE SCREW-WORM (*Cochliomyia hominivorax*) IN THE SOUTHWEST

During the period January 16-22 a total of 8 cases was reported in the Southwestern Eradication Area; all in TEXAS as follows by county: Bee 1, Brooks 1, Starr 2, Webb 4. The Republic of Mexico reported 72 cases as follows by State: Tamaulipas 26, Sonora 6, Chihuahua 2, Nuevo Leon 2, Territorio sur de Baja California 36. Sterile screw-worm flies released: Texas 16,658,250, Mexico 45,152,000.

Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
1964	0	0	30	108	0.00	0.00
1965	0	3	41	233	0.00	1.28
1966	8	24	18	107	44.44	22.42

Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
1965	53	196	28	136	189.28	144.11
1966	79	246	17	70	464.70	351.42

Feasibility Survey - During this period 423 cases were identified in Mexico south of the Barrier Zone as follows: Oaxaca 9, Durango 6, Sinaloa 30, Veracruz 75, Puebla 9, Guerrero 64, Nayarit 16, Michoacan 12, Campeche 11, Zacatecas 8, Mexico 0, Aguascalientes 1, San Luis Potosi 8, Morelos 6, Guanajuato 13, Chiapas 12, Yucatan 83, Hidalgo 3, Tabasco 15, Colima 15, Jalisco 27.

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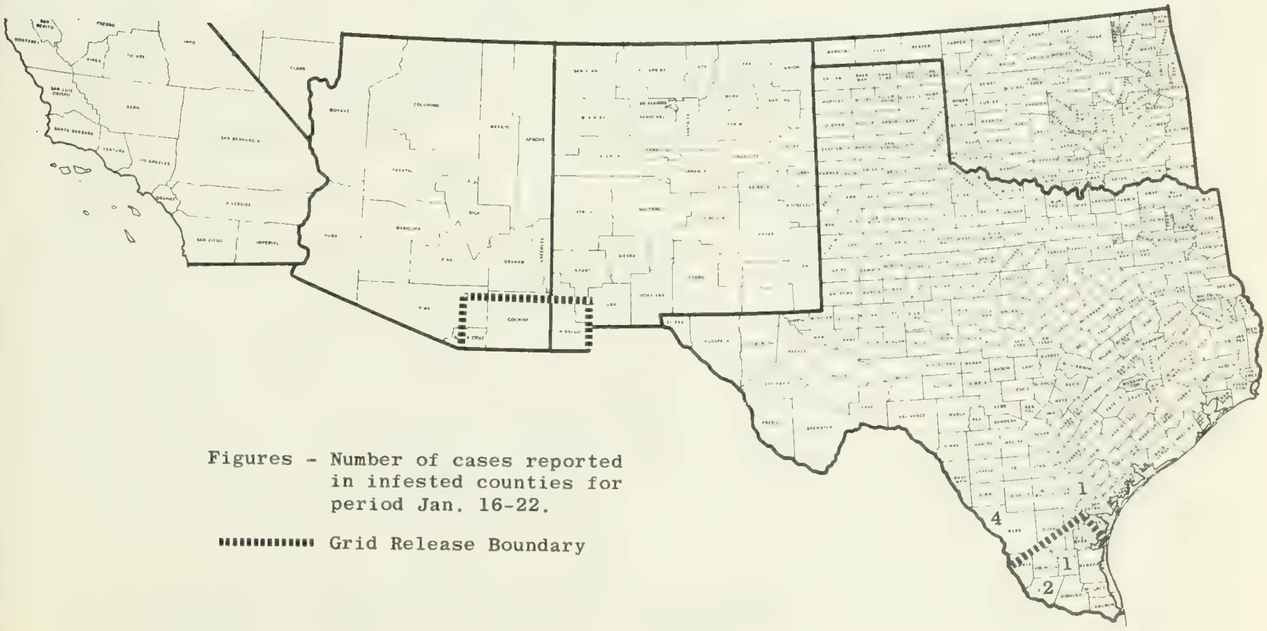
* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).



Figures - Number of cases reported in infested counties for period Jan. 16-22.

┅┅┅┅ Grid Release Boundary

HIGHLIGHTS OF THE OCCURRENCE OF INSECTS AND OTHER ARTHROPODS IN CANADA, 1965

C. Graham MacNay

A generally cool season in Canada, in the west consistently wet and in much of the east at first too dry then too wet, adversely affected the normal development of most agricultural pests. Infestations and damage were, on the whole, much lighter than usual. The following are some of the more important records.

In the interior of British Columbia, GRASSHOPPER infestations were generally moderate. Control measures were necessary only in the Nicola Zone, where approximately 600 acres of rangeland were treated, compared with 1,100 acres in 1964. In Alberta, the area infested was half that of 1964, the major decrease occurring north of the Bow River, and crop damage in the Province by insects, generally, was light. In Saskatchewan, numbers of adult grasshoppers reached the lowest level in 10 years. Cool, wet weather in spring and early summer retarded hatching and nymphal development, and comparable conditions in September adversely affected maturation and oviposition. A fungus, *Entomophthora grylli*, again aided in reducing populations in most eastern and southern regions of the Province. In general, the outbreak potential for 1966 was greatly reduced. A survey of adult grasshopper abundance revealed that, compared with 1964, populations of economic importance were reduced by 77 percent, with a comparable reduction in the area of infestation. Infestations were light in 220 townships, only 10 were moderately infested and none severely. In Manitoba, adverse weather conditions also greatly reduced numbers in the western part of the Province, and, with conditions ideal for plant growth, damage was negligible. A further reduction in numbers was expected.

In British Columbia, VARIEGATED CUTWORM (*Peridroma saucia*) occurred in outbreak numbers in the Chilliwack and Agassiz areas. In the Kamloops area, CUTWORM damage was generally light. In the Prairie Provinces, too, little damage occurred. In southern Alberta and west central Saskatchewan, PALE WESTERN CUTWORM (*Agrotis orthogonia*) lightly damaged some cereal crops. In an area south of Edmonton, Alberta, and in the Saskatoon and North Battleford areas of Saskatchewan, RED-BACKED CUTWORM (*Euxoa ochrogaster*) caused minor damage. In southeastern Alberta, ARMY CUTWORM (*Chorizagrotis auxiliaris*) injured some spring wheat and mustard; it was not reported in Saskatchewan. In Manitoba, GLASSY CUTWORM (*Crymodes devastator*) in an unusual infestation, injured many lawns in Greater Winnipeg. In southwestern Ontario, DARK-SIDED CUTWORM (*Euxoa messoria*) severely damaged tobacco and strawberry. In the Atlantic Provinces, no damage by ARMYWORM (*Pseudaletia unipuncta*) was reported, although in 1964 it had occurred in outbreak numbers in the area, and to a lesser extent elsewhere in Eastern Canada.

WHEAT STEM SAWFLY (*Cephus cinctus*), unusually numerous in the Prairie Provinces in 1964, increased slightly in Alberta, especially southeast of Lethbridge, and, though present in reduced numbers in Saskatchewan, still caused more damage than in several years immediately prior to 1964. In British Columbia, WIREWORMS were less injurious than usual. In southwestern Ontario they attacked tobacco on untreated sod land. In southern Alberta, SUGAR-BEET ROOT MAGGOT (*Tetanops myopaeformis*) caused very little damage, even though much less insecticide had been used, and early control measures prevented damage to sugar beets by FLEA BEETLES (*Phyllotreta* spp.). In northern agricultural areas of Alberta, CABBAGE LOOPER (*Trichoplusia ni*) and a FLEA BEETLE (*Phyllotreta* sp., prob. *cruciferae*), caused widespread damage to rape. In Saskatchewan, SWEETCLOVER WEEVIL (*Sitona cylindricollis*) was scarce and caused little damage, but in Manitoba large numbers severely damaged seedling sweetclover and, in a few cases, alfalfa. In Saskatchewan, ALFALFA WEEVIL (*Hypera postica*) was more abundant than in previous 4 years but damage was light. Larvae of PAINTED LADY (*Vanessa cardui*) infested essentially all sunflower plantings in the Province, about 20,000 acres, but damage was comparatively light. They also fed freely on Canada thistle. In southwestern Ontario, EUROPEAN CORN BORER (*Ostrinia nubilalis*) survived the winter in small numbers. Low temperatures were further responsible for a small second generation and damage was correspondingly light. NORTHERN CORN ROOTWORM (*Diabrotica longicornis*) was very numerous. In plantings where corn had been grown on the same land for several successive years, goosenecked plants were common and lodging was severe. CORN LEAF APHID (*Rhopalosiphum maidis*) was abundant, especially on late corn, causing some reduction in kernel set. Some late-maturing corn was damaged also by FALL ARMYWORM (*Spodoptera frugiperda*). In southwestern Quebec, as in Ontario, EUROPEAN CORN BORER occurred in unusually small numbers. In Kent County, Ontario, TOBACCO HORNWORM (*Manduca sexta*), TOMATO HORNWORM (*M. quinquemaculata*) and ROOT MAGGOTS (*Hylemya* spp.) caused little damage to tobacco. In Eastern Ontario, most JUNE BEETLES (*Phyllophaga* spp.), being mainly in adult stage, caused little damage to grass roots.

In British Columbia, GOLDEN NEMATODE (*Heterodera rostochiensis*) was found on potatoes in a small area at the southern tip of Vancouver Island. This is the second establishment in Canada, the first being in Newfoundland where it was discovered in 1962. In the lower Fraser Valley, British Columbia, APHIDS on peas, and CABBAGE APHID (*Brevicoryne brassicae*), IMPORTED CABBAGEWORM (*Pieris rapae*) and DIAMONDBACK MOTH (*Plutella maculipennis*) on cabbage, were all less numerous than usual. CABBAGE MAGGOT (*Hylemya brassicae*) on cruciferous crops continued a major problem, especially in turnips, and CARROT RUST FLY (*Psila rosae*) was difficult to control. An infestation of GARDEN SYMPHYLAN (*Scutigerella immaculata*) near Kamloops has persisted since recorded in 1963. In Winnipeg, Manitoba, CABBAGE MAGGOT severely damaged crucifers, and ONION MAGGOT (*Hylemya antiqua*) was difficult to control. In southwestern Ontario, FLEA BEETLE larvae injured rutabagas in the Guelph area, SUGARBEET ROOT APHID (*Pemphigus betae*) was common and ONION MAGGOT scarce in Kent County, while in Essex County, FIELD CRICKETS (*Gryllus* spp.) severely infested canning tomatoes and PEPPER MAGGOT (*Zonosemata electa*), though abundant from 1960 to 1963, was very scarce, probably because of improved control. In southwestern Quebec, vegetable insects generally were not very injurious. CABBAGE MAGGOT on crucifers and POTATO STEM BORER (*Hydroecia micacea*) on potato and tomato were fairly numerous, but ONION MAGGOT and PEA APHID (*Acyrthosiphon pisum*) occurred in numbers well below average. In the Eastern Townships, WHITE GRUBS damaged potatoes on new land. In Nova Scotia, BLACK BLISTER BEETLE (*Epicauta pennsylvanica*) severely damaged potato foliage near Parrsboro. In Prince Edward Island, damage to turnips by ROOT MAGGOTS and to crucifers generally by CABBAGE LOOPER and IMPORTED CABBAGEWORM was greater than usual, but damage by POTATO INSECTS in general was below average. In Newfoundland, IMPORTED CABBAGEWORM was unusually numerous, indicating developing resistance to DDT, and in central and eastern areas CABBAGE MAGGOT was becoming difficult to control by any means.

In the Okanagan Valley, British Columbia, as a result of severe weather conditions late in 1964 and in the spring of 1965, the tree fruit crop, with the exception of apples, was a failure and a high percentage of fruit trees was killed. An AMBROSIA BEETLE (*Anisandrus pyri*) and SHOT-HOLE BORER (*Scolytus rugulosus*) caused increased damage and, in the Creston area, CHERRY FRUIT FLIES (*Rhagoletis* spp.) were difficult to control. In the lower Fraser Valley, a LEAF ROLLER (*Dasystoma salicellum*) on blueberry was controlled by helicopter spraying. In the Niagara Peninsula, Ontario, infestations of insects, excepting APHIDS, and of MITES were unusually light on all fruit crops, mainly because of cool weather. EUROPEAN RED MITE (*Panonychus ulmi*) was more troublesome on apple and pear than on peach and plum, and ORIENTAL FRUIT MOTH (*Grapholitha molesta*) at its lowest ebb in many years, caused little damage to peach. PEAR SAWFLY (*Hoplocampa brevis*),* first recorded in the Province near Queenston in 1964, was found to be lightly distributed in the eastern half of the Peninsula and causing little damage. In Norfolk County, Ontario, the cool, dry spring precluded late generations of CODLING MOTH (*Carpocapsa pomonella*) and RED-BANDED LEAF ROLLER (*Argyrotaenia velutinana*), but EUROPEAN RED MITE, APPLE APHID (*Aphis pomi*) and APPLE MAGGOT (*Rhagoletis pomonella*) persisted late in the season. In extreme southwestern Ontario, ORIENTAL FRUIT MOTH caused no commercial damage to peach. Parasitism of the second generation by an ICHNEUMON WASP (*Glypta rufiscutellaris*) was approximately 75 percent, but for the first time in many years no parasitism by a BRACONID WASP (*Macrocentrus ancylivorus*) was recorded.

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* The following is quoted from the 1964 Canada summary. "In Queenston, Ontario, an extensive infestation of a sawfly, believed to be *Hoplocampa brevis* (Klug), new to North America, was found on pear." This note was not included in CEIR 15(2): 19-21, as determination was not positive at time of publication.

In southwestern Quebec, APPLE APHID and TENT CATERPILLARS (*Malacosoma* spp.) were more numerous than usual, and APPLE MAGGOT and EUROPEAN RED MITE also required control measures. Minor pests included OYSTERSHELL SCALE (*Lepidosaphes ulmi*), EYE-SPOTTED BUD MOTH (*Spilonota ocellana*), FRUIT-TREE LEAF ROLLER (*Archips argyrospilus*), an APPLE LEAF TIER (*Pseudexentera mali*) and PLUM CURCULIO (*Conotrachelus nenuphar*). In Nova Scotia, predator and pest populations in apple orchards were comparable to those of 1964. The use of a certain phosphate insecticide against WINTER MOTH (*Operophtera brumata*) in some orchards resulted in an increase of phytophagous mites. *Pseudexentera mali* became more widespread but caused no fruit damage, and FRUIT-TREE LEAF ROLLER was found in only two orchards. Control measures were necessary for CODLING MOTH and, in some orchards, for APPLE MEALYBUG (*Phenacoccus aceris*). In most orchards EYE-SPOTTED BUD MOTH, APPLE MAGGOT, WINTER MOTH, APPLE SUCKER (*Psylla mali*), GRAY-BANDED LEAF ROLLER (*Argyrotaenia mariana*), SOFT SCALES (*Lecanium* spp.), OYSTERSHELL SCALE and APHIDS required no control.

In most areas of southern British Columbia, snow-pool and floodwater MOSQUITOES were much less abundant than usual. In the Prairie Provinces, after heavy precipitation, common species became extremely abundant and some uncommon species fairly numerous. An increased incidence of western equine encephalitis in horses and humans was associated with the outbreak. ROCKY MOUNTAIN WOOD TICK (*Dermacentor andersoni*) was well controlled, only one local outbreak occurring in cattle in British Columbia and two in Alberta. BLACK FLIES were very numerous in the Cariboo district, British Columbia, and both CATTLE GRUBS (*Hypoderma* spp.) and LONG-NOSED CATTLE LOUSE (*Linognathus vituli*) increased somewhat in the Province. In the Prairie Provinces, SHORT-NOSED CATTLE LOUSE (*Haematopinus eurysternus*) was much more abundant than usual during the unusually severe winter. A survey indicated that FACE FLY (*Musca autumnalis*) was established in southern areas of Manitoba and Saskatchewan and was spreading westward rapidly.

Other occurrences of note included: In Vancover, British Columbia, and in eastern Newfoundland, unusual outbreaks of CRANE FLY adults and larvae; in British Columbia, increased numbers of WASPS and HORNETS, *Crambus* spp., WESTERN SUBTERRANEAN TERMITE (*Reticulitermes hesperus*), VARIED CARPET BEETLE (*Anthrenus verbasci*) and CARPENTER ANTS (*Camponotus* spp.), but fewer FLEAS (*Ctenocephalides* spp.), CLUSTER FLY (*Pollenia rudis*) and LARDER BEETLE (*Dermestes lardarius*); in Prince Edward Island, LARDER BEETLE was abundant where hibernating flies were numerous.

INTERCEPTIONS OF SPECIAL INTEREST AT U.S. PORTS OF ENTRY

Some important interceptions that were reported by the Plant Quarantine Division, ARS, USDA, during November 1965, follow. These reports are based on identifications received from Federal taxonomists at the U. S. National Museum during the month, and include any of special interest from recent months that were not previously reported.

GIANT AFRICAN SNAIL (*Achatina fulica* Bowdich) one time at Boston, Massachusetts.

LEEK MOTH (*Acrolepia assectella* (Zell.)) 2 times; once each at Boston, Massachusetts, and at New York, New York.

CHINESE ROSE BEETLE (*Adoretus sinicus* (Burm.)) 5 times, twice in mail and 3 times in air baggage, at Honolulu, Hawaii.

SEED BEETLES (*Bruchus* spp.) - *B. ervi* Froel. once in baggage at Boston, Massachusetts. *B. signaticollis* (Gyll.) (Central European and Mediterranean bruchid pest of lentils) once in air baggage at Boston, and *B. tristiculus* Fahr. once in air baggage at same location.

A SEED BEETLE (*Callosobruchus analis* (F.) (a widespread bruchid pest of legumes) once in ship's stores at Tampa, Florida.

MEDITERRANEAN FRUIT FLY (*Ceratitis capitata* (Wied.)) 28 times; at Honolulu (17), Hawaii; New York (9), New York; and once each at San Francisco and San Pedro, California.

ASIATIC RICE BORER (*Chilo suppressalis* (Wlk.)) once in baggage at San Francisco, California.

MELON FLY (*Dacus cucurbitae* Coq.) once in ship's stores at San Francisco.

ORIENTAL FRUIT FLY (*Dacus dorsalis* Hend.) 12 times; once in mail, once in ship's stores and 10 times in baggage; 10 times at Honolulu, Hawaii, and one time each at San Francisco and San Pedro, California.

A SPRUCE CONE MOTH (*Laspeyresia strobilella* (L.)) once in cargo of *Picea* sp. cones at Baltimore, Maryland.

KHAPRA BEETLE (*Trogoderma granarium* Everts) 101 times; at Baltimore (7), Maryland; Boston (1), Massachusetts; Brownsville (1) and Houston (4), Texas; Charleston (6), South Carolina; Detroit (1), Michigan; Dulles International Airport (2) and Norfolk (24), Virginia; Jacksonville (4) and Tampa (1), Florida; Mobile (1), Alabama; New Orleans (3), Louisiana; New York (21), New York; Philadelphia (9), Pennsylvania; San Diego (1), San Francisco (3) and San Pedro (4), California; Savannah (6), Georgia; Wilmington (1), North Carolina; Seattle (1), Washington.

EUROPEAN CHERRY FRUIT FLY (*Rhagoletis cerasi* (L.)) 8 times; at John F. Kennedy International Airport (7), New York; San Pedro (1), California.

AN AVOCADO SEED MOTH (*Stenoma catenifer* (Wlsm.)) 5 times; twice each at Galveston and Laredo, Texas; once at Tampa, Florida.

WHITE GARDEN SNAIL (*Theba pisana* (Müller)) 45 times (35 alive and 10 dead); at Baltimore (1), Maryland; Charleston (8), South Carolina; Dover (6), Delaware; Duluth (1), Minnesota; John F. Kennedy International Airport (1), New York (11), New York, Milwaukee (1), Wisconsin; New Orleans (12), Louisiana; Philadelphia (1), Pennsylvania; San Juan (1), Puerto Rico; San Pedro (1), California; Savannah (1), Georgia.

FEDERAL-STATE PLANT PROTECTION PROGRAMS

BOLL WEEVIL (Anthonomus grandis) - MEXICO - Properties totaling 93 acres in the Juarez, Chihuahua, treatment area of 1963 and 27 properties totaling 1,081 acres in Municipio Villa Ahumada, Chihuahua, inspected with negative results. Surveys in Mexicali, Baja California, and San Luis Rio Colorado, Sonora, valleys negative. (PPC Mex. Reg., Dec. Rpt.).

Boll Weevil Situation in Big Bend Area of Texas

During 1965, infestation in the Presidio area of the Big Bend was the lowest in several years, permitting harvesting of the top crop. Following the treatment program in the Presidio-Ojinaga area, a survey consisting of ground trash and bolls was conducted during the period January 3-6, 1966. In the survey, 100 square yards of surface trash were examined and only one boll weevil was detected. No boll weevils were detected in 31 square yards of cotton plant trash in rows. Four live adult weevils were found in 1,150 bolls examined. (PPC).

A WEEVIL (Anthonomus sp.) - ARIZONA - Two adults found in trash beneath mesquite tree from perimeter of cotton field south of Standfield, Pinal County. (Ariz. Coop. Sur.).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Biological Control Zone - Total of 12,803 citrus trees inspected on 128 properties in Municipios Hidalgo, Guemez and Victoria in southern Tamaulipas; 255 trees lightly infested on 37 properties in Municipios Hidalgo and Guemez. Third insecticide application made on 1,731 trees on 32 properties in urban zone of Mainero, Tamaulipas, December 9, 10 and 11. Total of 374,100 parasites captured in Municipios Padilla and Guemes, Tamaulipas. Chemical Control Zone - Total of 58,591 trees on 1,222 properties inspected with negative results in States of Tamaulipas, Nuevo Leon, Sonora and Baja California. (PPC Mex. Reg., Dec. Rpt.).

CITRUS WHITEFLY (Dialeurodes citri) - CALIFORNIA - Adverse weather again restricted operations; however, 22 blocks sprayed in the Sacramento area bringing seasonal total to 153 blocks. At Fresno, Fresno County, 11 blocks covered. Peripheral surveys continue negative. At the present rate eradication spray will be completed well in advance of pupation. (Cal. Coop. Rpt.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - NORTH CAROLINA - Several small extensions found in Brunswick County. GEORGIA - Reinspection in treated areas showed some mounds in areas treated before 1965; extensions of known infestations found in most counties. Largest extensions in Troup, Rockdale, and Henry Counties. FLORIDA - New infestations found in Jefferson and Washington Counties. ALABAMA - Surveys indicate new infested properties in Blount, Cullman, Etowah, Marion, Morgan, St. Clair, and Walker Counties. MISSISSIPPI - Newly infested area found in Warren County; minor extensions found in several other counties. LOUISIANA - Minor extensions of infested area were found in East Carroll, West Carroll, and Morehouse Parishes; approximately 200 infested acres found in Lincoln Parish. TEXAS - New infestations or reinfestations found in Colorado, Brazoria, Bexar, and Fort Bend Counties. (PPC South. Reg., Dec. Rpt.). ARKANSAS - Surveys in 6 southern and eastern counties, January 10-14, negative. (Ark. Ins. Sur.).

JAPANESE BEETLE (Popillia japonica) - MISSOURI - Treatment completed on approximately 320 acres of turf (730 acres overall) at 4 locations in St. Louis November 29-December 7, 1965. (PPC Cent. Reg.)

KHAPRA BEETLE (Trogoderma granarium) - ARKANSAS - Surveys of 15 properties in 7 counties, January 10-14, negative. (Ark. Ins. Sur.).

MEDITERRANEAN FRUIT FLY (Ceratitis capitata) - MEXICO - Surveys in 18 States and one territory negative. (PPC Mex. Reg., Dec. Rpt.).

MEXICAN FRUIT FLY (*Anastrepha ludens*) - MEXICO - Total of 4,376 inspections of 780 traps on 685 properties in States of Baja California and Sonora negative. (PPC Mex., Reg., Dec. Rpt.).

PINK BOLLWORM (*Pectinophora gossypiella*) - ARIZONA - In Maricopa County 1,110 lint-cleaner inspections yielded 2,692 larvae. One larva found in 562 lint-cleaner inspections in Pinal County, from cotton harvested in Hidden Valley. Larvae readily observed during lint-cleaner inspections in Graham County. In Yuma County, 861 lint-cleaner inspections negative; 30 bushels of gin trash from Mohave County negative. (PPC West. Reg., Dec. Rpt.). OKLAHOMA - Positive finds in lint-cleaner inspections in Beckham, Canadian, Comanche, Custer, Greer, Grady, Harmon, Jackson, Kiowa, McClain, Tillman, and Washington Counties. TEXAS - Lint-cleaner inspection in the Waco district revealed larvae easily found in northern part of the district; especially heavy in parts of Martin and Coleman Counties. LOUISIANA - Larvae recovered in Caddo, De Soto, and Natchintoches Parishes in lint-cleaner inspections. (PPC South. Reg., Dec. Rpt.). MEXICO - Lint-cleaner inspections in southern Tamaulipas and northern Veracruz yielded one specimen in Municipo Altamira, Tamaulipas. Inspection in Matamoros, Tamaulipas, negative. Inspection of 600 bushels of gin trash from 1,629 bales and 652 lint-cleaner inspections in Municipio Mexicali, Baja California, negative. One field in Colonia Tecolote, Bataquez, Mexicali, Baja California, infested. In Municipo San Luis Rio Colorado, Sonora, 4 specimens recovered from 1,356 bushels of gin trash representing 2,415 bales. Field inspections of green bolls yielded 2 larvae. (PPC Mex. Reg., Dec. Rpt.).

SWEETPOTATO WEEVIL (*Cylas formicarius elegantulus*) - SOUTH CAROLINA - New infested property found in Jasper County. GEORGIA - New infested properties found in Appling and Ware Counties. ALABAMA - New infested properties found in Coffee, Geneva and Washington Counties. MISSISSIPPI - Few new infested properties found in Adams, Jones and Jefferson Davis Counties. LOUISIANA - Inspections were made in 18 parishes; new infested properties were found in Bienville, Caddo, De Soto, Evangeline,Livingston, Natchitoches, Rapides, Sabine, St. Helena, Tangipahoa and Washington Parishes; 116 properties released from regulation in 6 parishes. (PPC South. Reg., Dec. Rpt.).

WHITE-FRINGED BEETLES (*Graphognathus* spp.) - FLORIDA - One property in Okaloosa County and 5 in Santa Rosa County found infested. LOUISIANA - Approximately 350 acres infested in vicinity of Monroe Airport, Ouachita Parish. (PPC South. Reg., Dec. Rpt.).

INSECT DETECTION

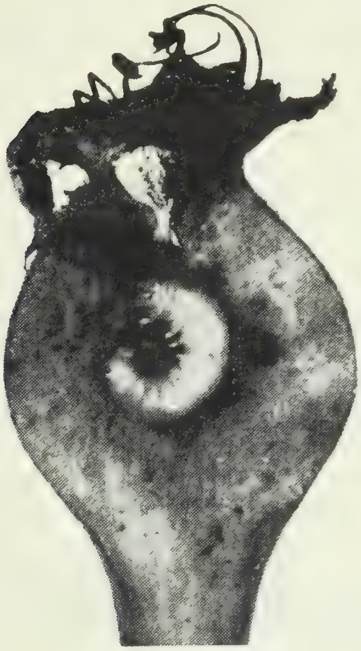
An Aphid from Crucifers

Aphids collected from Chenopodium album by E. W. Davis near Cowiche, Yakima County, Washington, in 1947, described by George F. Knowlton and Shih Chun Ma as Landisaphis n. gen. davisi n. sp. (Kans. Ent. Soc. J. 22(4):147-148, 1949). Re-examination of aphids collected by B. J. Landis from various species of wild mustards at several locations in eastern Washington from 1951 to 1965 by L. M. Russell, shows them to be L. davisi. Examination of lambsquarters failed to show this aphid present; E. W. Davis reported collections from this host. It is possible Davis swept mixed stand of weeds, or that aphids had wandered to lambsquarters. However, crucifers are preferred, if not sole hosts of L. davisi. (B. J. Landis).

Pear Sawfly (Hoplocampa brevis (Klug)) Reported in United States for First Time

Approximately 20 adults collected in tanglefoot trap by L. W. Boulanger in pear orchard near Newburgh, Orange County, NEW YORK, submitted in July 1953. Doubtfully identified as H. brevis in 1953 by USDA specialists. Specimens were in very poor condition, and the state of European literature at that time did not allow firm identification. Results of recent taxonomic research and fresh examination of original material now confirm identification. However, specimens of H. brevis have not been submitted since 1953 in the United States. (R. H. Foote). The following comments concerning this find were made by Dr. Boulanger of the University of Maine: European apple sawfly was actively broadening its range at this time (1952). As a graduate student studying the life history and control of this pest in New York, considerable time was spent tracking down reports and making trap surveys to confirm occurrence. The pear orchard in question was reported in late 1952 by the grower. Tanglefoot traps were set in the orchard the following spring in trees most heavily infested in 1952. Considerable material was collected. All specimens were submitted for determination in event H. brevis was present. Difficulty in establishing positive identification was due to tanglefoot covering specimens. The infestation was cleared up by intensive spraying; trappings and sweepings in 1954 failed to yield any H. brevis specimens. There was a report of another infestation in an Ulster County orchard in 1954, but it is not known if this report was investigated. (L. W. Boulanger). Specimens believed to be H. brevis were found on pear at Queenston, Ontario, Canada, in 1964. During 1965, establishment of this species on the Niagara Peninsula was confirmed by Dr. H. E. Milliron, Canada Department of Agriculture. A revised article on the economic importance, distribution, description and biology of this pest that originally appeared in CEIR 8(26):573-574, is reproduced on pages 63-64 of this issue. Also see page 57 for note on this pest in Canada in 1965. These are first reports of H. brevis in North America. Detection surveys for this pest should be conducted in New York and other pear-growing areas during 1966. (PPC).

PEAR SAWFLY (Hoplocampa brevis (Klug))

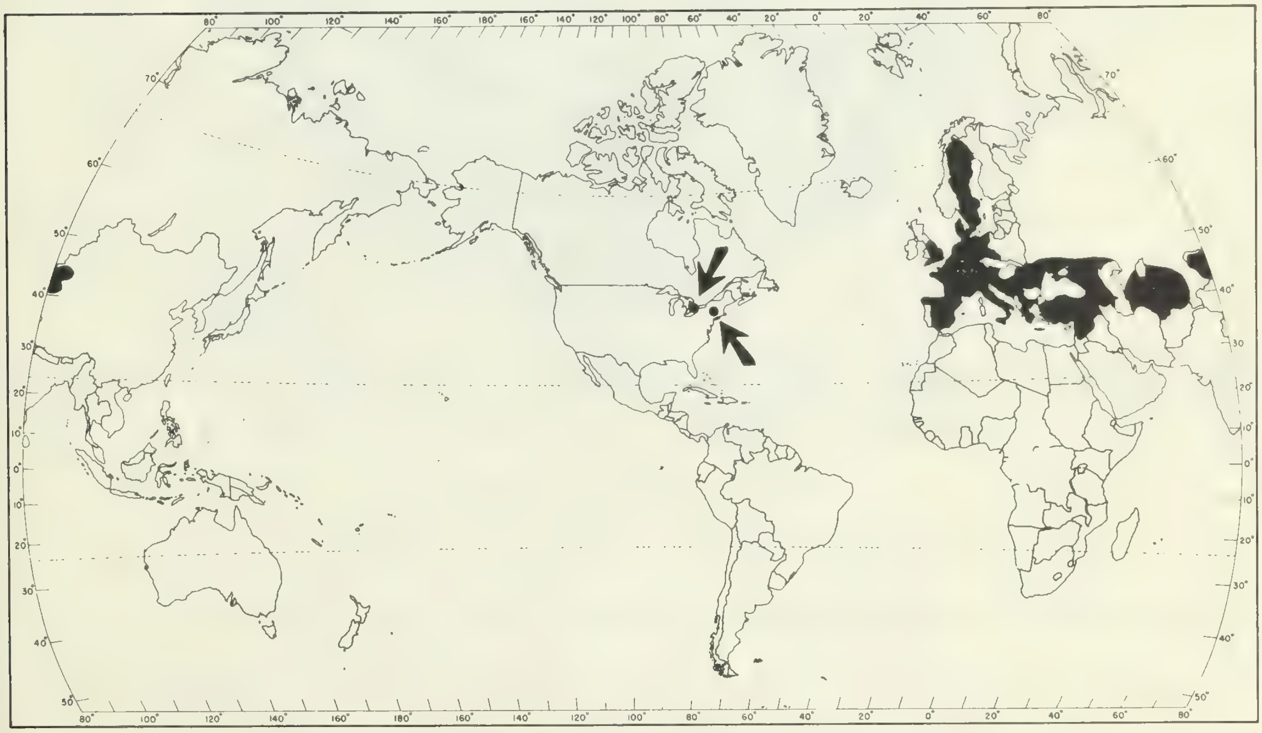


Damage to Pears

Economic Importance: This tenthredinid is an important pest of pears in many areas of Europe. Although infestations are not consistent from year to year, it is generally considered to be a very harmful species. Populations will remain unnoted for awhile, then suddenly appear in very destructive numbers. In some years as high as 80 percent of the fruits will be attacked but infestations may be highly localized in fruit growing areas. During 1938-39, 60 to 80 percent of the pears were attacked in the Crimea of USSR.

Distribution: The species occurs in European USSR, Romania, Greece, Italy, Netherlands, England, France, Yugoslavia, Denmark, Germany, Sweden, Spain, Belgium, Switzerland and Austria in Europe. In Asia it is found in Kazakhstan and Turkestan in the USSR; Turkey and Syria. Specimens collected in 1953 in New York were confirmed in 1965. H. brevis also was confirmed in Canada in 1965.

Hosts: Pear is the major host but plum and apple also are attacked.

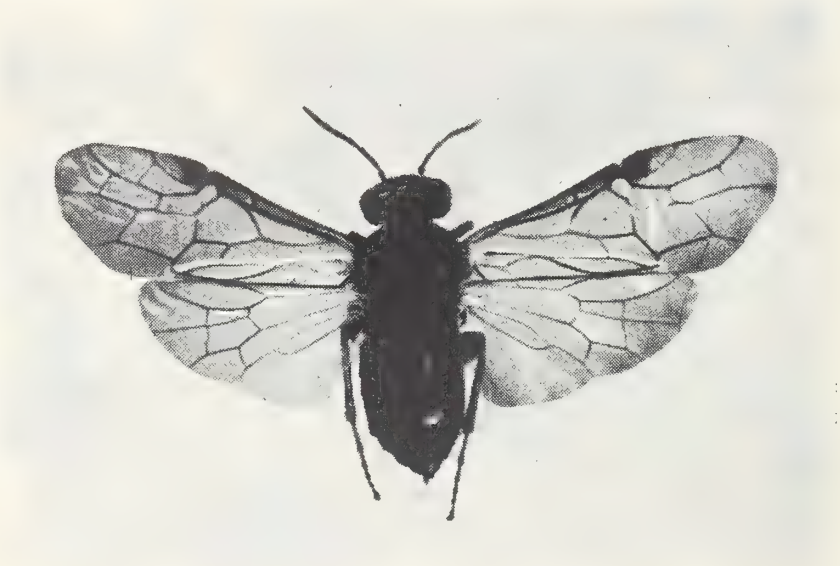


General Distribution of Pear Sawfly

(Tenthredinidae, Hymenoptera)

Life History and Habits: Life history of H. brevis in the Crimea of USSR is as follows: Larvae overwinter in cocoons in the soil, some just below the surface and some at depths down to 8 inches. Pupation occurs in mid-March. The adults appear when pear buds are separating, being present for 8 to 10 days. Reproduction is parthenogenetic. The females contain fully developed eggs upon emergence. Each female deposits from 37 to 40 eggs, singly, on the lower halves of the flower buds. There are usually 4 eggs per bud. Larvae hatch in 6 to 8 days and feed within developing fruits, destroying seeds and migrating from one fruit to another until full-fed. Feeding lasts from 21 to 23 days during which each larva will damage up to 4 fruitlets and pass through five larval instars. In mid-May, the mature larvae drop to the ground, usually in the infested fruitlets, and then enter the soil to overwinter. Some larvae will not pupate the following spring, but will remain dormant until the succeeding year.

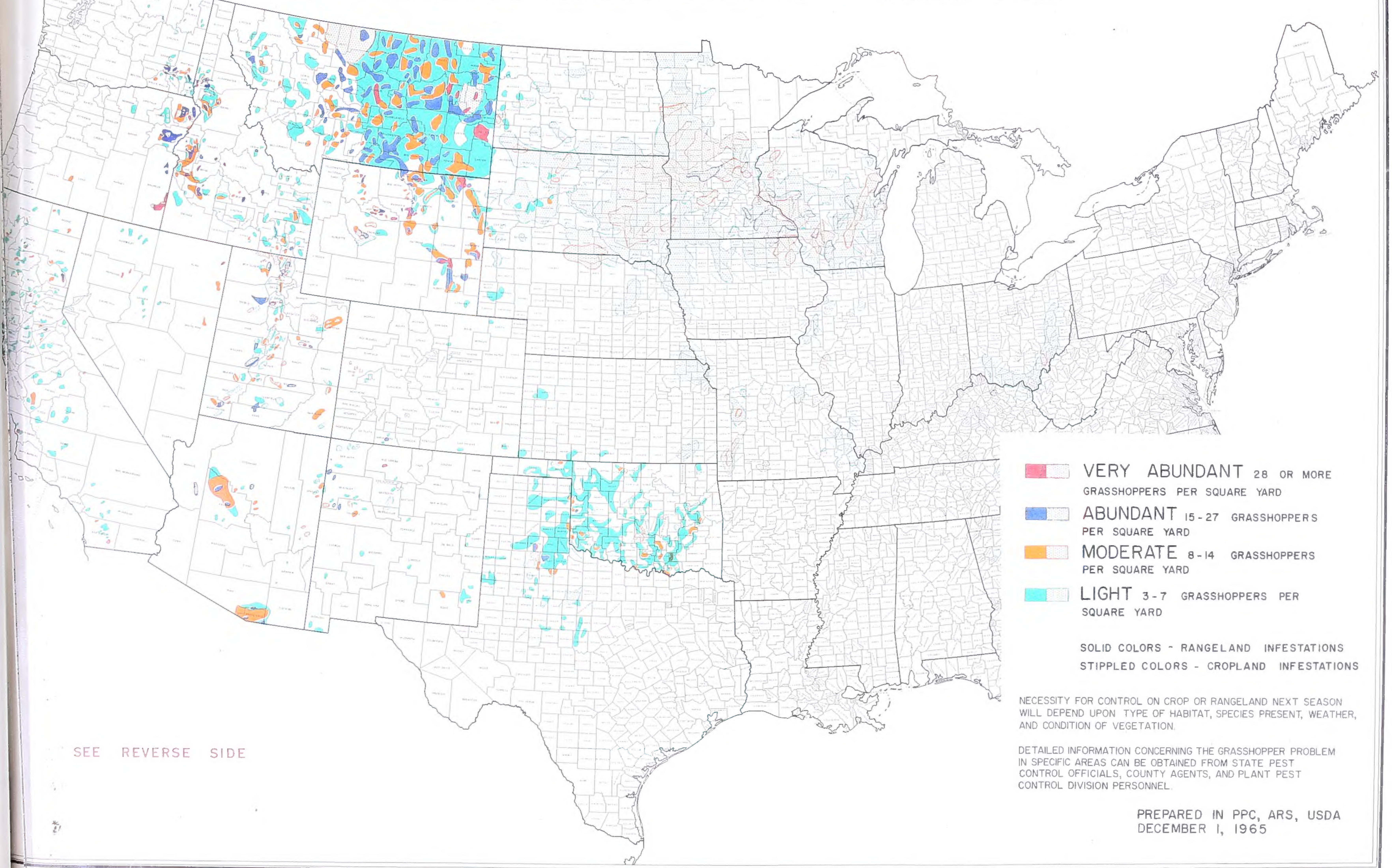
Description: Adult is 4-5 mm. in length. Mesonotum brown, spotted black. Stigma light yellow, base brownish. Head and antennae brownish-yellow without black coloring apart from the eyes. Thorax reddish-yellow, mesonotum somewhat darker with dark streaks on the individual sclerites and on the base of the scutum. Metanotum black. Mesonotum densely punctured. Legs yellow, wings hyaline with yellow veins. Dorsal surface of abdomen black, ventral surface yellow. Egg is white and translucent, measuring 0.7 by 0.26 mm. Fifth-instar larva is about 7 to 9 mm. long; head with brown spot on frons, otherwise tan; no conspicuous caudal tergites. The body and legs are pale green and claws brown. There is a slight darkening of the dorsal surface of the anal segment, somewhat less on ninth segment and slightly noticeable on eighth segment. The cocoons are dark brown and rough-coated due to sand particles adhering to surface. They vary in length from 5.9 to 6.2 mm. and in width from 2.9 to 3.3 mm. (Prepared in Plant Pest Survey Section in cooperation with other ARS agencies).



Adult of Hoplocampa brevis

Figures (except map) from Thomas, I. 1936. Ann. Appl. Biol. 23(3):633-639.

GRASSHOPPER ADULT SURVEY — FALL 1965


VERY ABUNDANT 28 OR MORE GRASSHOPPERS PER SQUARE YARD
ABUNDANT 15-27 GRASSHOPPERS PER SQUARE YARD
MODERATE 8-14 GRASSHOPPERS PER SQUARE YARD
LIGHT 3-7 GRASSHOPPERS PER SQUARE YARD
SOLID COLORS - RANGELAND INFESTATIONS
STIPPLED COLORS - CROPLAND INFESTATIONS

NECESSITY FOR CONTROL ON CROP OR RANGELAND NEXT SEASON WILL DEPEND UPON TYPE OF HABITAT, SPECIES PRESENT, WEATHER, AND CONDITION OF VEGETATION.

DETAILED INFORMATION CONCERNING THE GRASSHOPPER PROBLEM IN SPECIFIC AREAS CAN BE OBTAINED FROM STATE PEST CONTROL OFFICIALS, COUNTY AGENTS, AND PLANT PEST CONTROL DIVISION PERSONNEL.

PREPARED IN PPC, ARS, USDA
DECEMBER 1, 1965

SEE REVERSE SIDE

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

TO COOPERATORS:

This map is based upon the results of cooperative grasshopper adult surveys made during the late summer and fall of 1965. The survey reveals where and how many grasshoppers infest an area, and indicates the potential severity of infestations for 1966. Nymphal surveys, made in the spring, determine population densities, and indicate those areas where control may be necessary in 1966.

The infestations in croplands are shown on the map in stippling. Control on those lands will be handled by the farmers with technical assistance from Division and State personnel. The infested range areas, shown on the map in solid colors (orange, blue and red only), total 16,612,455 acres in 13 Western and Midwestern States. Shaded areas on the map are diagrammatic. Within these areas, infestations may be solid or spotted.

RANGELAND GRASSHOPPER INFESTATIONS - ACREAGE BY REGIONS, FALL 1965

(Moderate Populations or Above - Orange, Blue and Red)

REGION AND STATE	LANDOWNERSHIP - ACRES		TOTAL ACRES
	Private and State	Public Domain	
CENTRAL			
So. Dakota	32,250	6,490	38,740
WESTERN			
Arizona	1,274,000	537,200	1,811,200
California	125,010	2,000	127,010
Idaho	468,280	1,099,000	1,567,280
Montana	7,333,000	1,747,000	9,080,000
Nevada	--	49,900	49,900
New Mexico	16,500	15,400	31,900
Oregon	280,700	320,000	600,700
Utah	97,865	117,760	215,625
Washington	246,000	--	246,000
Wyoming	1,970,100	371,900	2,342,000
SOUTHERN			
Oklahoma	342,500	--	342,500
Texas	159,600	--	159,600

The survey was planned and performed by the Plant Pest Control Division, Agricultural Research Service, in cooperation with variou State agencies concerned.

GPO 971-930

UNITED STATES DEPARTMENT OF AGRICULTURE
Hyattsville, Maryland 20782

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